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Date: April 30, 2007/Jessica Sexton/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): Gregory L. Meredith, *et al.*

Examiner: Beth Van Doren

Serial No: 09/620,771

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Title: LONG RUNNING TRANSACTION INTEGRATION WITH SELECTIVE
DEHYDRATION AND SELECTIVE COMPENSATION

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

Applicant submits this brief in connection with an appeal of the above-identified patent application. Payment is being submitted via credit card in connection with all fees due regarding this appeal brief. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [MSFTP105USA].

I. Real Party in Interest (37 C.F.R. §1.192(c)(1))

The real party in interest in the present appeal is Microsoft Corporation, the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §1.192(c)(2))

Appellants, appellants' legal representatives, and/or the assignee of the present application are not aware of any appeals or interferences which will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §1.192(c)(3))

Claims 1-40, 42-46 and 48-52 are pending in the subject application. The rejection of claims 1-40, 42-46 and 48-52 is appealed.

IV. Status of Amendments (37 C.F.R. §1.192(c)(4))

No claim amendments have been entered subsequent the Final Office Action.

V. Summary of Claimed Subject Matter (37 C.F.R. §1.192(c)(5))**A. Independent claim 1**

Independent claim 1 recites a method of processing a workflow action within a schedule and having a latency attribute associated therewith, comprising, initiating the workflow action; comparing the latency attribute that is associated with the workflow action with a latency threshold and selectively storing data associated with a schedule in a storage medium based on the latency comparison. (*See e.g.*, Figure 1, and corresponding text, p.10, l.12 - p.11, l.5).

B. Independent claim 11

Independent claim 11 recites a method of executing a schedule, the schedule comprising a schedule state, at least one transaction having a workflow action associated with it and the action having a latency attribute associated with it. The subject invention provides a method for efficiently executing long running transactions in a computer system *via* a method that comprises initiating the workflow action according to the schedule, comparing the latency attribute with a

latency threshold and based on the comparison, selectively storing the schedule state in a storage medium. (p.10, ll.21-23 and p.10, l.30 – p.11, l.2).

C. Independent claim 30

Independent claim 30 recites a method of executing a schedule, the schedule comprising a schedule state, at least one transaction with a workflow action associated therewith. The subject invention provides a method for efficiently executing long running transactions in a computer system via a method that comprises initializing a workflow action within the schedule, comparing a latency attribute associated with the workflow action and a latency threshold, executing the action if the latency attribute does not exceed the latency threshold and dehydrating the schedule if the latency attribute exceeds the latency threshold. (Fig 7c, p.20, l.29 – p.21 l.9).

D. Independent claim 32

Independent claim 32 recites a computer-readable medium having computer-executable instructions for efficiently executing long running transactions in a computer system. The system comprises initiating a workflow action having a latency attribute associated therewith, comparing the latency attribute with a latency threshold and storing data associated with a schedule in a storage medium based on the latency comparison. (p.10, ll.21-23 and p.10, l.30 – p.11, l.2).

E. Independent claim 40

Independent claim 40 recites a method of executing a transaction having an associated transaction boundary and a workflow action, wherein the workflow action has an action state and a compensation parameter associated therewith. The subject invention provides a method for efficiently executing long running transactions in a computer system via a method comprising recognizing a transaction boundary associated with the transaction and selectively compensating at least a first workflow action according to the transaction boundary and the compensation parameter based on abortion of a second workflow action. (p.4, ll.25-30 and p.26, ll.4-25).

F. Independent claim 46

Independent claim 46 recites a computer-readable medium having computer-executable instructions for executing a schedule, the schedule comprising a schedule state, at least one workflow action, and at least one transaction with an associated transaction boundary, the workflow action including an action state and a compensation parameter associated therewith. The system executes a long running transaction by recognizing the transaction boundary within the schedule and selectively compensating at least a first workflow action within the schedule according to a transaction boundary within the schedule, and a compensation parameter associated with the first workflow action based on abortion of a second workflow action. (p.26 ll.26 – 31).

G. Independent claim 51

Independent claim 51 recites in the execution of a schedule in a computer system, the schedule comprising a schedule state, a workflow action with an associated action state, and at least one inter-business transaction with a transaction boundary, a compensation parameter, a compensation routine, and a transaction state associated therewith, a method of selectively compensating the transaction during the execution of a schedule, comprising determining the action state of the workflow action, if the action state is aborted, determining the relationship of the workflow action and the transaction based on a transaction boundary, if the action state is aborted, and if the workflow action and transaction are related according to the transaction boundary, determining the transaction state of the transaction and if the action state is aborted, and if the workflow action and the transaction are related according to the transaction boundary, and if the transaction state is committed, performing an operation according to the compensation routine associated with the transaction. (p.27, ll.11-29).

H. Independent claim 52

Independent claim 52 recites, in the execution of a schedule in a computer system, the schedule comprising a schedule state, first and second transactions with associated transaction boundaries, transaction states, compensation parameters, and compensation routines, and first and second workflow actions with a associated action states, compensation parameters, and compensation routines, a method of selectively compensating the first workflow action or

transaction during the execution of a schedule, comprising determining the state of one of the second workflow action and the second transaction, if the state of one of the second workflow action and second transaction is aborted, determining the relationship of the first workflow action and transaction with the second workflow action and transaction based on the transaction boundary, if the state of one of the second workflow action and second transaction is aborted, and if one of the first workflow action and transaction are related to one of the second workflow action and transaction according to the transaction boundary, determining the state of one of the first workflow action and transaction and if the state of one of the second workflow action and second transaction is aborted, and if one of the first workflow action and transaction are related to one of the second workflow action and transaction according to the transaction boundary, and if the state of one of the first workflow action and transaction is committed, performing an operation according to the compensation routine associated with one of the first workflow action and transaction. (p.29, l.17- p.31, l.4).

The aforementioned means for limitations are identified as claim elements subject to the provisions of 35 U.S.C. §112 ¶6. The corresponding structures are identified with reference to the specification and drawings in the parentheticals above corresponding to those claim limitations.

VI. Statement of the Issues (37 C.F.R. §1.192(c)(6))

- A. Whether claims 1-22, 26, 28-40, 42-44, 46 and 48-52 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Hsu, *et al.* (US 5,581,691).
- B. Whether claims 23-25, 27 and 45 are unpatentable under 35 U.S.C. §103(a) over Hsu, *et al.* (US 5,581,691).

VII. Argument (37 C.F.R. §1.192(c)(8))

A. Rejection of Claims 1-22, 26, 28-40, 42-44, 46 and 48-52 Under 35 U.S.C. §102(b)

Claims 1-22, 26, 28-40, 42-44, 46 and 48-52 stand rejected under 35 U.S.C. §102(b) as being anticipated by Hsu *et al.* (US 5,581,691). Withdrawal of this rejection is respectfully requested for at least the following reasons. Hsu *et al.* does not disclose or suggest each and every element as set forth in the subject claims.

A single prior art reference anticipates a patent claim only if it expressly or inherently describes each and every limitation set forth in the patent claim. *Trintec Industries, Inc., v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 U.S.P.Q.2D 1597 (Fed. Cir. 2002). (Emphasis added). “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicants’ claimed invention relates to effective utilization of system resources in long running workflow transactions. Independent claims 1, 11, 30 and 32 recite similar limitations, namely a *method of processing a workflow action within a schedule and having a latency attribute associated therewith, comprising: **initiating a workflow** action, **comparing a latency attribute with a latency threshold** and **selectively storing data associated with a schedule in a storage medium based on the latency comparison***. Hsu *et al.* fails to disclose such claimed aspects.

Hsu *et al.* is directed towards a workflow management system and method for executing and tracking the progress of long running workflows and for recovering from system failures during the execution of long running workflows. The Examiner asserts that Hsu *et al.* teaches comparing a latency attribute with a latency threshold, and selectively storing data associated with a schedule in a storage medium based on the latency comparison. Applicants’ representative respectfully disagrees. In accordance with the claimed invention, the system processes a workflow action within a schedule, where the workflow action has a latency attribute associated with it. The latency attribute is compared with a pre-determined latency threshold, and based on this comparison the system stores the schedule state information in a storage medium. On the contrary, at the cited portions, Hsu *et al.* teaches a timeout duration value that indicates a maximum amount of time allotted for executing a step in a workflow, on exceeding that duration the step will timeout and its status marked as timeout. Once a timeout occurs, a compensation routine is called or a history inspector module reassigns that step. The cited reference also teaches a flow controller that stores the results of each step in a workflow. This storage is done for all steps in the workflow and used for system crash recovery and status monitoring. However, the maximum amount of time allotted for executing a step in a workflow

cannot be compared with comparing a latency attribute with a latency threshold. A latency attribute is associated with a dormant period that becomes active or may represent the estimated time a corresponding action will take to complete. Based on the latency comparison, a decision is made to store the data. Hsu *et al.* is silent regarding *latency comparison* let alone *selectively storing data associated with a schedule in a storage medium based on the latency comparison*.

Independent claim 40 recites *recognizing a transaction boundary associated with a transaction and selectively compensating at least a first workflow action according to the transaction boundary and a compensation parameter based on abortion of a second workflow action*. Independent claim 46 recites similar limitations. Hsu *et al.* fails to disclose such claimed aspects. At the cited portions, Hsu *et al.* teaches a step in a workflow, a flow controller that stores the results of each step and a compensation routine that is called when a step fails. The compensation routine does system recovery for that step and all the steps preceding that step. As each step in a workflow is a transaction, the compensation is done for all steps in the workflow preceding the aborted step, and thus it is irrespective of transaction boundary. Thus, Hsu *et al.* is silent regarding *selectively compensating at least a first workflow action according to the transaction boundary and a compensation parameter based on abortion of a second workflow action* as recited by applicants' subject claims.

Independent claims 51, and 52 recite: *if the action state is aborted, and if the workflow action and transaction are related according to the transaction boundary, determining the transaction state of the transaction and if the action state is aborted, and if the workflow action and the transaction are related according to the transaction boundary, and if the transaction state is committed, performing an operation according to the compensation routine associated with the transaction*. Hsu *et al.* fails to disclose such claimed aspects. At the cited portions, Hsu *et al.* discloses a compensation routine called when a step in a workflow is given a timeout or aborted status. The compensation routine performs system recovery for that step and all the preceding steps in that workflow. Hsu *et al.* is silent regarding *if the action state is aborted, and if the workflow action and transaction are related according to the transaction boundary, determining the transaction state of the transaction* let alone performing an operation according

to the compensation routine associated with the transaction upon committing the transaction state as recited by applicants' subject claims.

In view of at least the foregoing it is readily apparent that Hsu *et al.* does not teach the identical invention in as complete detail as is contained in independent claims 1, 11, 30, 32, 40, 42, 46, 51 and 52 (and the claims that depend from). Accordingly, reversal of this rejection is requested.

B. Rejection of Claims 23-25, 27 and 45 Under 35 U.S.C. §103(a)

Claims 23-25, 27 and 45 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hsu, *et al.* (US 5,581,691). This rejection should be withdrawn for at least the following reasons. As previously discussed, Hsu *et al.* fails to disclose all limitations of independent claims 11 and 32 (from which claims 23-25, 27 and 45 depend). Therefore, this rejection should be reversed.

VIII. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1-52 be reversed.

Respectfully submitted,

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IX. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))

1. A method of processing a workflow action within a schedule and having a latency attribute associated therewith, comprising:
 - initiating the workflow action;
 - comparing the latency attribute that is associated with the workflow action with a latency threshold; and
 - selectively storing data associated with a schedule in a storage medium based on the latency comparison.
2. The method of claim 1, further comprising creating an association between the stored data and a signal.
3. The method of claim 2, further comprising suspending execution of the schedule based on the latency comparison.
4. The method of claim 3, further comprising selectively de-allocating resources associated with the schedule after suspending execution of the schedule.
5. The method of claim 3, further comprising selectively resuming execution of the schedule based on the signal.
6. The method of claim 4, further comprising selectively allocating computer system resources for execution of the schedule based on the signal, and selectively resuming execution of the schedule based on the signal.
7. The method of claim 1, further comprising adjusting the latency attribute according to a variable.
8. The method of claim 7, wherein the variable is related to the actual latency for completion of the workflow action.

9. The method of claim 1, wherein the data comprises schedule state information.
10. The method of claim 1, further comprising adjusting the latency threshold based on a variable.
11. A method of executing a schedule, the schedule comprising a schedule state, at least one transaction having a workflow action associated therewith, the action having a latency attribute associated therewith, the method comprising:
 - initiating the workflow action according to the schedule;
 - comparing the latency attribute with a latency threshold; and
 - selectively storing the schedule state in a storage medium based on the latency comparison.
12. The method of claim 11, further comprising creating an association between the stored schedule state and a signal.
13. The method of claim 12, further comprising suspending execution of the schedule based on the latency comparison.
14. The method of claim 13, further comprising selectively de-allocating resources associated with the schedule after storing the schedule state in the storage medium.
15. The method of claim 13, further comprising selectively resuming execution of the schedule based on the signal.
16. The method of claim 15, further comprising selectively allocating computer system resources for execution of the schedule based on the signal, and selectively resuming execution of the schedule based on the signal.
17. The method of claim 11, wherein the schedule includes a plurality of workflow actions and at least one of the workflow actions has an associated latency attribute.

18. The method of claim 17, wherein the latency attribute represents an estimated latency for completion of the associated workflow action.
19. The method of claim 17, further comprising adjusting at least one of the latency attributes according to a variable.
20. The method of claim 19, wherein the variable is related to an actual latency for completion of the associated workflow action.
21. The method of claim 17, wherein the latency attributes have a class associated therewith, and wherein the class indicates a grouping of workflow actions.
22. The method of claim 21, further comprising providing a plurality of latency thresholds, wherein each latency threshold has a class associated therewith, and selectively comparing a latency attribute with a latency threshold having the same class upon initiating the action associated with the latency attribute.
23. The method of claim 22, further comprising adjusting at least one of the latency thresholds based on a variable.
24. The method of claim 23, wherein the variable is related to system resource utilization.
25. The method of claim 11, further comprising adjusting the latency threshold based on a variable.
26. The method of claim 11, further comprising selectively storing the schedule state in a database schema based on the latency comparison.
27. The method of claim 11, wherein the schedule state comprises a schedule location and active data.

28. The method of claim 11, wherein the workflow action has a compensation parameter associated therewith, further comprising selectively compensating the workflow action based on the compensation parameter, a transaction boundary within the schedule, and a state associated with another workflow action within the schedule.
29. The method of claim 11, further comprising selectively compensating a first workflow action according to a transaction boundary within the schedule and a compensation parameter associated with the first workflow action, based on abortion of a second workflow action within the schedule.
30. A method of executing a schedule, the schedule comprising a schedule state, at least one transaction with a workflow action associated therewith, the method comprising:
- initializing a workflow action within the schedule;
 - comparing a latency attribute associated with the workflow action and a latency threshold;
 - executing the action if the latency attribute does not exceed the latency threshold; and
 - dehydrating the schedule if the latency attribute exceeds the latency threshold.
31. The method of claim 30, wherein dehydrating the schedule further comprises storing the schedule state to a storage medium, creating a proxy between the stored schedule state and a message, suspending execution of the schedule pending the expected workflow action, and restoring the schedule and resuming execution of the schedule based on receipt of the message.
32. A computer-readable medium having computer-executable instructions for:
- initiating a workflow action having a latency attribute associated therewith;
 - comparing the latency attribute with a latency threshold; and
 - storing data associated with a schedule in a storage medium based on the latency comparison.
33. The computer-readable medium of claim 32, having further computer-executable instructions for creating an association between the stored data and a signal.

34. The computer-readable medium of claim 33, having further computer-executable instructions for suspending execution of the schedule based on the latency comparison.
35. The computer-readable medium of claim 34, having further computer-executable instructions for selectively de-allocating resources associated with the schedule after suspending execution of the schedule.
36. The computer-readable medium of claim 34, having further computer-executable instructions for selectively resuming execution of the schedule based on the signal.
37. The computer-readable medium of claim 35, having further computer-executable instructions for selectively allocating resources to execution of the schedule based on the signal, and selectively resuming execution of the schedule based on the signal.
38. The computer-readable medium of claim 32, wherein the workflow action further has a compensation parameter associated therewith, having further computer-executable instructions for selectively compensating the workflow action based on the compensation parameter, a transaction boundary within the schedule, and a state associated with another workflow action within the schedule.
39. The computer-readable medium of claim 32, having further computer-executable instructions for selectively compensating a first workflow action according to a transaction boundary within the schedule and a compensation parameter associated with the first workflow action, based on abortion of a second workflow action within the schedule.
40. A method of executing a transaction having an associated transaction boundary and a workflow action, wherein the workflow action has an action state and a compensation parameter associated therewith, the method comprising:
- recognizing a transaction boundary associated with the transaction; and
 - selectively compensating at least a first workflow action according to the transaction boundary and the compensation parameter based on abortion of a second workflow action.

41. (Cancelled)
42. The method of claim 40, further comprising selectively compensating at least the first workflow action according to the transaction boundary and the compensation parameter upon abortion of the second workflow action, and further according to the action state associated with the first workflow action.
43. The method of claim 42, further comprising selectively compensating at least the first workflow action according to the transaction boundary and the compensation parameter upon abortion of the second workflow action, if the first workflow action has committed.
44. The method of claim 43, wherein the compensation step further comprises instantiating at least one object.
45. The method of claim 43, wherein the compensation step further comprises sending a message.
46. A computer-readable medium having computer-executable instructions for:
executing a schedule, the schedule comprising a schedule state, at least one workflow action, and at least one transaction with an associated transaction boundary, the workflow action including an action state and a compensation parameter associated therewith;
recognizing the transaction boundary within the schedule; and
selectively compensating at least a first workflow action within the schedule according to a transaction boundary within the schedule, and a compensation parameter associated with the first workflow action based on abortion of a second workflow action.
47. (Cancelled)

48. The computer-readable medium of claim 46, having further computer-executable instructions for selectively compensating the at least the first workflow action according to the transaction boundary and a compensation parameter associated with the first workflow action upon abortion of the second workflow action, and further according to the action state associated with the first workflow action.

49. The computer-readable medium of claim 48, having further computer-executable instructions for selectively compensating the at least the first workflow action according to the transaction boundary and the compensation parameter associated with the first workflow action upon abortion of the second workflow action, if the first workflow action has committed.

50. The computer-readable medium of claim 46, wherein the at least one workflow action includes a latency attribute, and having further computer-executable instructions for selectively storing the schedule state to a storage medium based on a comparison of the latency attribute with a latency threshold.

51. In the execution of a schedule in a computer system, the schedule comprising a schedule state, a workflow action with an associated action state, and at least one inter-business transaction with a transaction boundary, a compensation parameter, a compensation routine, and a transaction state associated therewith, a method of selectively compensating the transaction during the execution of a schedule, comprising:

- determining the action state of the workflow action;

- if the action state is aborted, determining the relationship of the workflow action and the transaction based on a transaction boundary;

- if the action state is aborted, and if the workflow action and transaction are related according to the transaction boundary, determining the transaction state of the transaction; and

- if the action state is aborted, and if the workflow action and the transaction are related according to the transaction boundary, and if the transaction state is committed, performing an operation according to the compensation routine associated with the transaction.

52. In the execution of a schedule in a computer system, the schedule comprising a schedule state, first and second transactions with associated transaction boundaries, transaction states, compensation parameters, and compensation routines, and first and second workflow actions with a associated action states, compensation parameters, and compensation routines, a method of selectively compensating the first workflow action or transaction during the execution of a schedule, comprising:

determining the state of one of the second workflow action and the second transaction;

if the state of one of the second workflow action and second transaction is aborted,

determining the relationship of the first workflow action and transaction with the second workflow action and transaction based on the transaction boundary;

if the state of one of the second workflow action and second transaction is aborted, and if one of the first workflow action and transaction are related to one of the second workflow action and transaction according to the transaction boundary, determining the state of one of the first workflow action and transaction; and

if the state of one of the second workflow action and second transaction is aborted, and if one of the first workflow action and transaction are related to one of the second workflow action and transaction according to the transaction boundary, and if the state of one of the first workflow action and transaction is committed, performing an operation according to the compensation routine associated with one of the first workflow action and transaction.

IX. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))

None.

X. Related Proceedings Appendix (37 C.F.R. §41.37(e)(1)(x))

None.